APS EXPERIMENT SAFETY APPROVAL FORM

Completed by Experimenter

NOTE: This form is to be submitted to the CAT. No experiment will be allowed to run until a properly completed and approved experiment safety approval form has been posted by an APS Floor Coordinator. **Approval is valid for a maximum of six months from the CAT approval date.**

Exp. Subject: _____ (See choices on second page) **Funding Source:** _____ (See choices on second page) ☐ Classified work will be performed

1. Beamline Station (Sector - BM or ID - station, e.g., 33ID-D): _____ **Date submitted:** _____

2. Experiment title: _____

3a. Experiment spokesperson: (Name, Institution, E-mail, and Telephone) _____

3b. List all other experimenters (names and institutions) working at the APS (attach second sheet if needed):

Paul Zschack, Hawoong Hong, Pete Jemian, Jenia Karapetrova

4. Materials List samples & chemicals to be used for on-site preparation and the experiment. Check appropriate boxes regarding known hazards:

☐ **More than 3 materials. Use UNICAT Sample Approval Form as attachment to this form.**

Name of material	Quantity	CAS # (if known)	Known Hazards					Dispose at ANL[2]
			toxic	biohazard level	flammable	Radioactive	other[1]	
1								
2								
3								

Notes: 1 Describe other known hazards in User comment section. See back of form for hazards definitions.
2 Check if you plan to dispose of the material at ANL, as either waste or effluent, at the end of the experiment.

This experiment will use/require: ☐ human subjects/material ☐ live animals ☐ on-site chemical preparation

5. Equipment to be used in the experiment that is not a permanent part of the beamline:

☐ cryogenics ☐ furnace ☐ high pressure ☐ laser ☐ high voltage ☐ non-UL listed electrical ☐ other

6. User comments (include special hazards/controls, describe effluents, previous Safety Approval Form Serial Number, Standard Operating Procedures, etc.; ☐ additional sheets attached):

Completed by CAT

☐ **Additional sheets attached to detail hazard controls/special procedures.** **UNICAT Safety Envelope # ___**

7. CAT comments: _____

8. Safety Approval Form Serial Number: _____(beamline)-_____(year)-_____(sequence) **9. Beam Shifts Scheduled:** _____(number)

10. Plans are adequate to mitigate hazards and activities are within the beamline operation safety envelope:

CAT approval: _____(name (print)) _____(signature) _____(date)

Person authorized to verify experiment safeguards: _____(name (print))

Experiment Safeguards Verification

All required controls, training & safeguards are in place to start the experiment (Authorization signature):

_____(name (print)) _____**(signature)** _____**(date)**

Subject area of this experiment, per DOE classification scheme (list the number of all categories that apply in the space provided on the form): [note: only the Experiment Safety Approval Form has to be forwarded to XFD and/or posted on the beamline by the Floor Coordinator.]

1	Materials sciences (includes condensed-matter physics and materials chemistry)	7	Earth sciences
2	Physics (excludes condensed-matter physics)	8	Environmental sciences
3	Chemistry (excludes materials chemistry)	9	Optics
4	Polymers	10	Engineering
5	Medical applications	11	Instrumentation or technique development related to user facilities
6	Biological and life sciences (excludes medical applications)	12	Purchase of specialty service(s) or materials
		13	Other: (please specify on front of form)

Source of support for the experiment. Please list all that apply in the space provided at the top of the Experiment Safety Approval Form.

1. DOE, Office of Basic Energy Sciences
2. DOE, Office of Biological & Environmental Research
3. DOE, Other (specify)
4. DOD, (specify)
5. NSF
6. NIH
7. NASA
8. USDA
9. Other U.S. Government (specify)
10. Industry
11. Foreign (specify)
12. Other (specify)

Hazard Class Definitions:

Hazard: Any existing or possible condition that, by itself or through interaction with other conditions, has the capacity to cause death, injury, illness, property damage, unacceptable environmental impact, or other losses.

Risk: A quantitative measure (or estimate) of the product of the probability that a hazard will result in ill-effect and the consequence of an ill-effect.

Toxic: Having the capacity to cause death, illness, or diminished function. A material that meets one or more of the following criteria should be considered toxic:

- Has a published LD_{50} (Lethal Dose 50%) equal to or less than 0.5 g/kg of body weight.
- Has a published LC_{50} (Lethal Concentration 50%) equal to or less than 1000 ppm.
- Has an OSHA permissible exposure limit (PEL) or ACGIH Threshold Limit Value (TLV) equal to or less than 5000 ppm.
- Has an OSHA PEL or ACGIH TLV equal to or less than 10 mg/m^3.

Biohazard: An agent of biological origin (e.g., all infectious organisms, their toxins, allergens of biological origin, and genetic fragments) that has the capacity to cause ill-effects in humans.

Flammable: Susceptible to ignition during storage, normal handling, or use. The term includes, but is not necessarily limited to:

- All materials that ignite spontaneously when exposed to air.
- All gases easily ignited in atmospheres containing approximately 21% oxygen.
- All liquids having a flashpoint below 100°F (38°C).
- All combustible solids and liquids having a physical form that makes them easily ignitable if dispersed into ambient atmospheres.

Radioactive: Any material having a measurable specific activity above background. While on the ANL site, materials with a specific activity ≥ 2 nCi/g must be transported by the ANL Special Materials Group. APS must be notified of any shipment of radioactive materials to/from the site.

Other: Can include oxidizers, corrosives, carcinogens, explosives, and any other hazard not listed.

APS Experiment Safety Envelope Summary:

Safety Envelope 1: APS Base Hazard Class
Safety Envelope 2: Cryogenic Hazards
Safety Envelope 3: High Temperatures
Safety Envelope 4: Lasers, Classes 3 and 4
Safety Envelope 5: High Pressure Systems
Safety Envelope 6: Chemicals
Safety Envelope 7: Biosafety Hazards
Safety Envelope 8: Radioactive Materials
Safety Envelope 9: Other Hazards